

USER'S MANUAL
Of
Intel Q87 Express Chipset
Based
M/B for LGA 1150 Quad Core Ready
Intel Core Processor

J59FAN

Rev: 1.0

Release date: July 25, 2013

Trademark:

* Specifications and Information contained in this documentation are furnished for information use only, and are subject to change at any time without notice, and should not be construed as a commitment by manufacturer.

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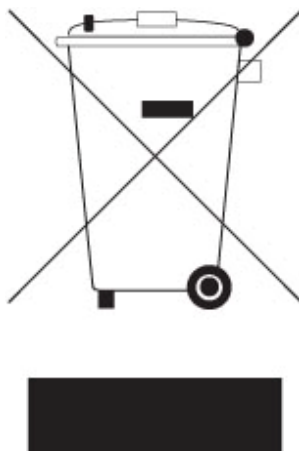


Environmental Safety Instruction

- Avoid the dusty, humidity and temperature extremes. Do not place the product in any area where it may become wet.
- 0 to 40 centigrade is the suitable temperature. (The figure comes from the request of the main chipset)
- Generally speaking, dramatic changes in temperature may lead to contact malfunction and crackles due to constant thermal expansion and contraction from the welding spots' that connect components and PCB. Computer should go through an adaptive phase before it boots when it is moved from a cold environment to a warmer one to avoid condensation phenomenon. These water drops attached on PCB or the surface of the components can bring about phenomena as minor as computer instability resulted from corrosion and oxidation from components and PCB or as major as short circuit that can burn the components. Suggest starting the computer until the temperature goes up.
- The increasing temperature of the capacitor may decrease the life of computer. Using the close case may decrease the life of other device because the higher temperature in the inner of the case.
- Attention to the heat sink when you over-clocking. The higher temperature may decrease the life of the device and burned the capacitor.

Environmental Protection Announcement

Do not dispose this electronic device into the trash while discarding. To minimize pollution and ensure environment protection of mother earth, please recycle.



USER'S NOTICE

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Manual Revision Information

| Reversion | Revision History | Date |
|-----------|------------------|---------------|
| 1.0 | First Edition | July 25, 2013 |

Item Checklist

- ☒ Motherboard
- ☒ User's Manual
- ☒ DVD for motherboard utilities
- ☒ Cable(s)
- ☒ I/O Back panel shield

Chapter 1

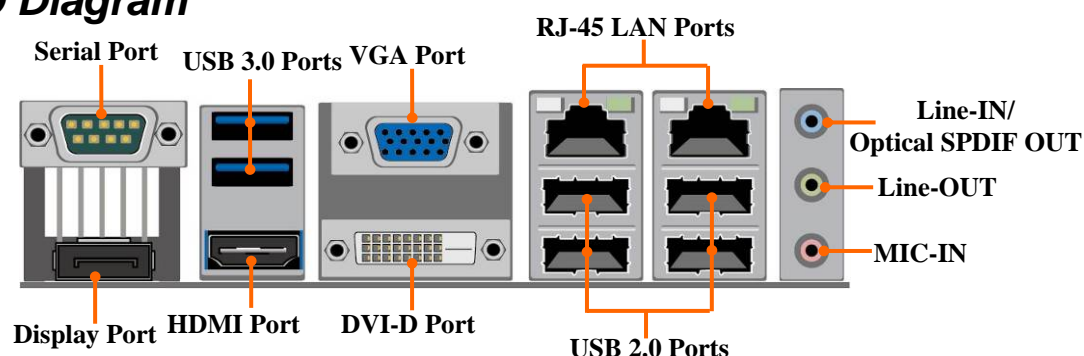
Introduction of the Motherboard

1-1 Specification

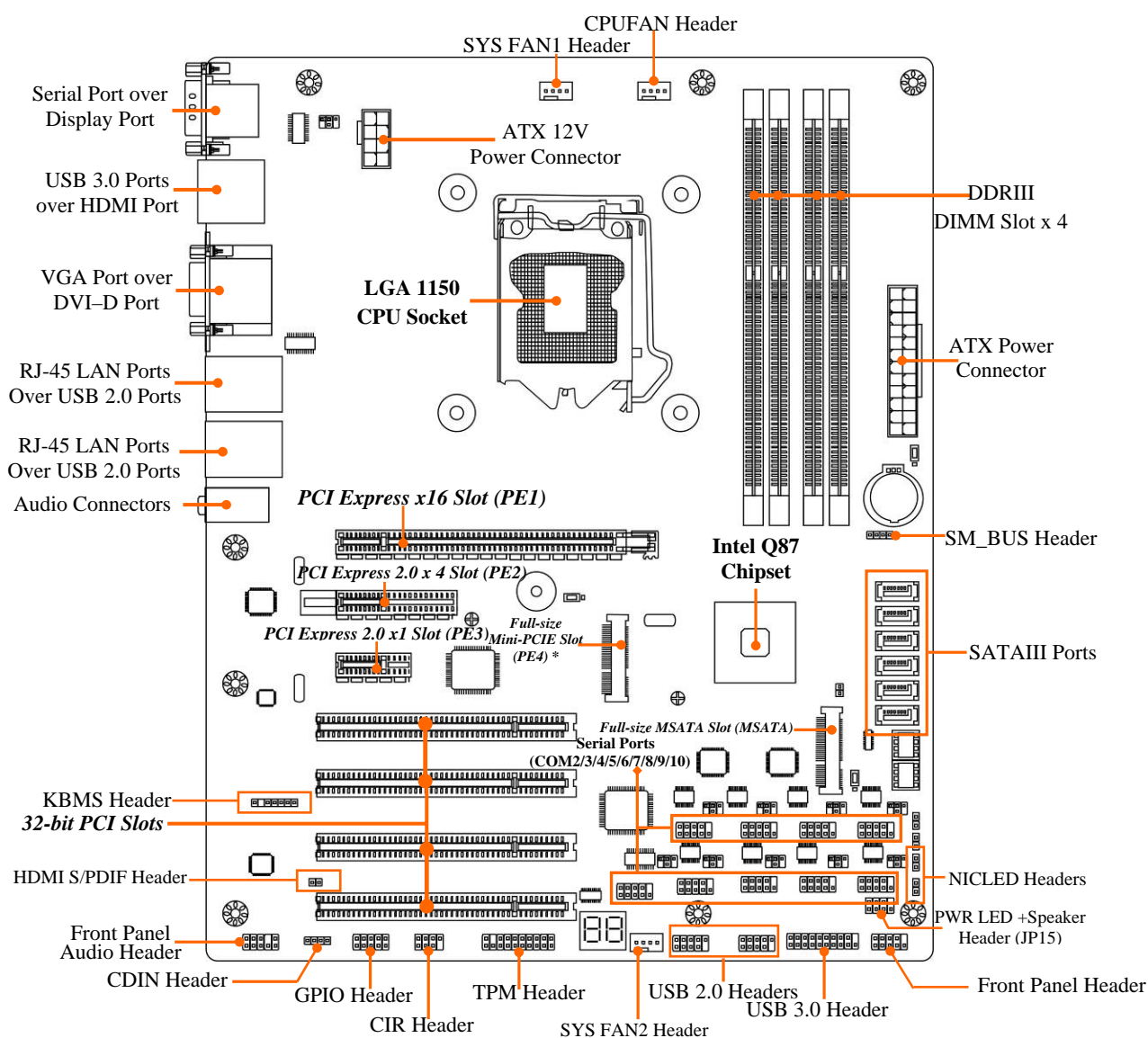
| Spec | Description |
|---------------------------|---|
| Design | <ul style="list-style-type: none"> ● ATX form factor; PCB size: 30.5 x24.5 cm |
| Chipset | <ul style="list-style-type: none"> ● Intel® Q87 Express Chipset |
| LGA1155 CPU Socket | <ul style="list-style-type: none"> ● Supports Intel® Core™ i7, Core™ i5, Core™ i3 series, Pentium® processor in LAG1150 Package <i>* for detailed CPU support information please visit our website</i> |
| Memory Slot | <ul style="list-style-type: none"> ● DDRIII RAM module slot x 4 ● Supporting four DDRIII 1600/1333/1066MHz RAM Module expandable to 32 GB (Maximum) ● Support dual-channel function |
| Expansion Slots | <ul style="list-style-type: none"> ● 1 pcs* PCI-Express x16 slot (PE1) ● 1 pcs* PCI-Express x4 slot (PE2) ● 1 pcs* PCI-Express x1 slot (PE3) ● 4 pcs *32-bit PCI slot ● 1 pcs* Full-size Mini-PCIE slot (PE4) ● 1 pcs* Full-size MSATA slot |
| Storage | <ul style="list-style-type: none"> ● 6 * SATAIII 6Gb/s ports support RAID 0, 1, 5, 10 function |
| Dual LAN Chips | <ul style="list-style-type: none"> ● Integrated Intel® 82574L and i217-LM Gigabit Ethernet LAN chip that supports Fast Ethernet LAN function of providing 10/100/1000Mbps Ethernet data transfer rate |
| HD Audio Chip | <ul style="list-style-type: none"> ● Realtek ALC662 6-channel Audio Codec integrated ● Audio driver and utility included |
| BIOS | <ul style="list-style-type: none"> ● 64M Bit DIP Flash ROM |
| Multi I/O | <p>Rear Panel I/O:</p> <ul style="list-style-type: none"> ● Serial port connector x1 ● Display port connector x1 ● HDMI port connector x1 ● DVI-D port connector x1 ● VGA port connector x1 ● USB 3.0 port connector x2 ● USB 2.0 port connector x4 ● RJ-45 LAN connector x2 ● Audio connector x3 (Line-in, Line-out, MIC) <p>Internal I/O Connectors& Headers:</p> <ul style="list-style-type: none"> ● 1 *24-pin main power connector ● 1 *8-pin 12V Power connector ● Front panel audio header x1 ● CDIN header x1 ● HDMI-SPDIF header x1 ● PS/2 KB & MS header x1 ● GPIO header x1 ● CIR header x1 ● TPM 1.2 header x1 ● USB 3.0 header x1 (support two expansion USB 3.0 ports) ● USB 2.0 header x2 (support four expansion USB 2.0 ports) ● Front panel header x1 ● POWER LED1+Speaker header x1 ● COM port header x 9 ● SM_BUS header x1 ● LANLED header x2 ● Fan header x 3 |

1-2 Layout Diagram

Rear IO Diagram

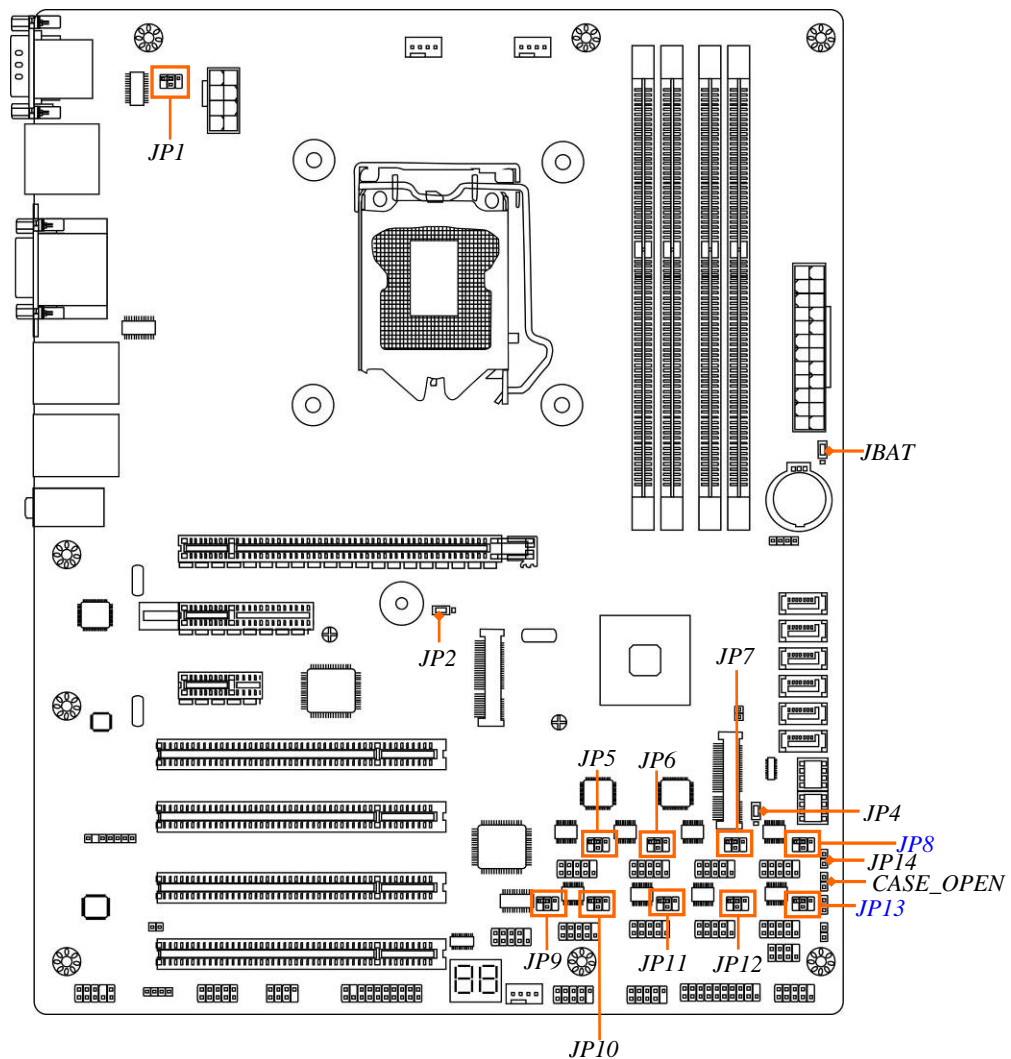


Motherboard Internal Diagram



***Notice:** 1. PE4 slot functions as full-size Mini-PCIE slot and shares function with PE3, i.e. only one can function at a time. 2. MSATA slot shares function with SATA6 port; user can only choose one to use at one time.

Motherboard Jumper Position



Jumper

| Jumper | Name | Description |
|-----------|--|-------------|
| JP1 | COM1 Port Pin9 Function Select | 4-pin Block |
| JP9 | COM2 Header Pin9 Function Select | 4-pin Block |
| JP5 | COM3 Header Pin9 Function Select | 4-pin Block |
| JP6 | COM5 Header Pin9 Function Select | 4-pin Block |
| JP7 | COM7 Header Pin9 Function Select | 4-pin Block |
| JP8 | COM9 Header Pin9 Function Select | 4-pin Block |
| JP10 | COM4 Header Pin9 Function Select | 4-pin Block |
| JP11 | COM6 Header Pin9 Function Select | 4-pin Block |
| JP12 | COM8 Header Pin9 Function Select | 6-pin Block |
| JP13 | COM10 Header Pin9 Function Select | 6-pin Block |
| JP14 | ME_Features Select | 2-pin Block |
| JBAT | CMOS RAM Clear Function Setting | 3-pin Block |
| JP2 | Mini PCI-E Slot (PE4)VCC3.3V/3.3VSB Select | 3-pin Block |
| JP4 | MSATA Slot (MSATA)VCC3.3V/3.3VSB Select | 3-pin Block |
| Case_OPEN | Case Open Message Display Function Select | 2-pin Block |

Connectors

| Connector | Name |
|---|---|
| ATXPWR | ATX Power Connector |
| ATX12V | ATX 12V Power Connector |
| COM1 | Serial Port COM Connector |
| DP | Display Port |
| USB1 | USB 3.0 Connector X2 |
| HDMI | High-Definition Multimedia Interface |
| CRT | Video Graphic Attach Connector |
| DVI1 | DVI-D Port Connector |
| UL1(Top)/UL2(Top) | RJ-45 LAN Connector X2 |
| UL1(Middle & Bottom)/UL2(Middle & Bottom) | USB 2.0 Port Connector X4 |
| AUDIO | Line Out /Line In /MIC Audio Connector |
| SATA1/2/3/4/5/6 | SATAIII Connector X6 |

Headers

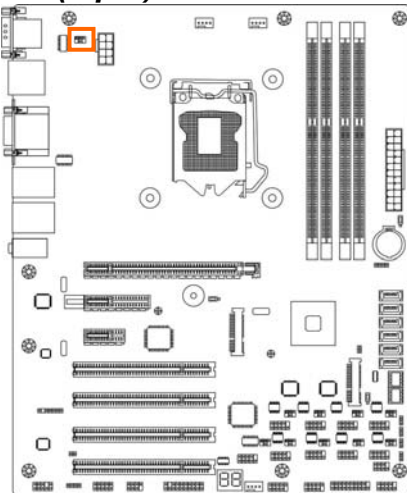
| Header | Name | Description |
|-------------------------------|--|--------------|
| FP_AUDIO | Front Panel Audio Header | 9-pin Block |
| CD_IN | CD Audio-In Header | 4-pin Block |
| HDMI_SPDIF | HDMI_SPDIF Out Header | 2-pin Block |
| KBMS | PS/2 Keyboard & Mouse Header | 6-pin Block |
| GPIO_CON | GPIO Header | 10-pin Block |
| CIR_CON | CIR Header | 7-pin Block |
| TPM | TPM Header | 19-pin Block |
| USB2 | USB 3.0 Header | 19-pin Block |
| USB3/USB4 | USB 2.0 Header | 9-pin Block |
| JW_FP (Front Panel Header) | PWR LED/ HD LED/ /Power Button /Reset | 9-pin Block |
| JP15 | Power LED+ Speaker Header | 7-pin Block |
| COM 2/3/4/5/6/7/8/9/10 | Serial Port Header | 9-pin Block |
| SM_BUS | SMBUS Header | 4-pin Block |
| NIC_LED1/ NIC_LED2 | LANLED Activity Header | 2-pin Block |
| SYSFAN1/SYSFAN2/CPUFAN | FAN Header | 4-pin Block |

Chapter 2

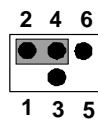
Hardware Installation

2-1 Jumper Setting

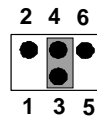
JP1 (4-pin): COM1 Port Pin9 Function Select



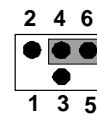
JP1→COM1 Port



2-4 Closed:
RI=RS232C

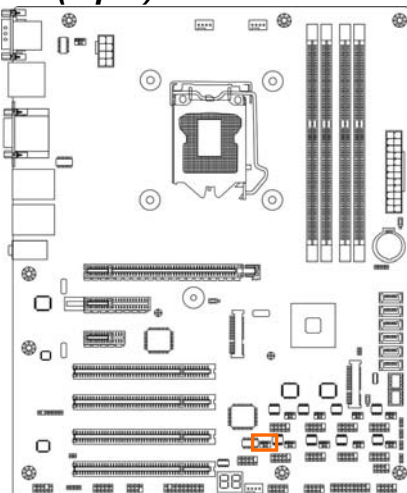


3-4 Closed:
RI= 5V;

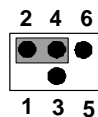


4-6 Closed:
RI= 12V;

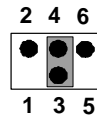
JP9 (4-pin): COM2 Header Pin9 Function Select



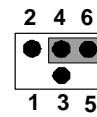
JP9→COM2 Header



2-4 Closed:
RI=RS232C

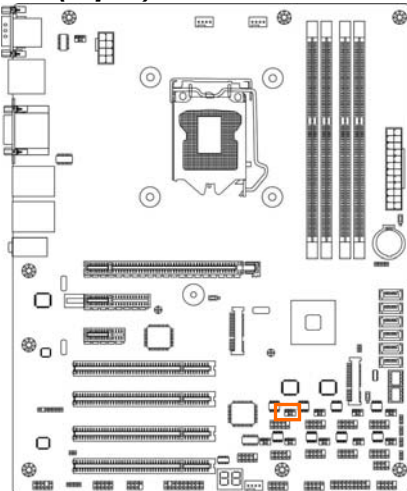


3-4 Closed:
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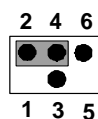


4-6 Closed:
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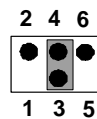
JP5 (4-pin): COM3 Header Pin9 Function Select



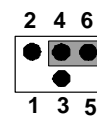
JP5→COM3 Header



2-4 Closed:
RI=RS232C

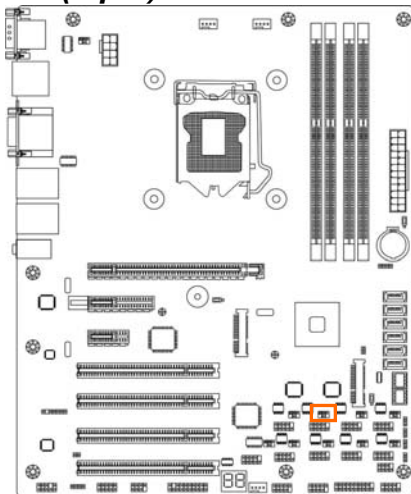


3-4 Closed:
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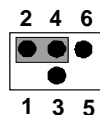


4-6 Closed:
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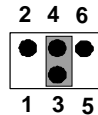
JP6 (4-pin): COM5 Header Pin9 Function Select



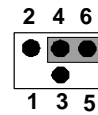
JP6→COM5 Header



2-4 Closed:
RI=RS232

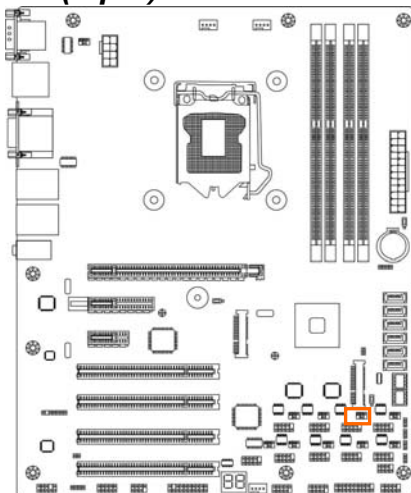


3-4 Closed:
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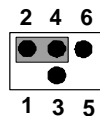


4-6 Closed:
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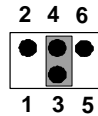
JP7 (4-pin): COM7 Header Pin9 Function Select



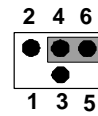
JP7→COM7 Header



2-4 Closed:
RI=RS232

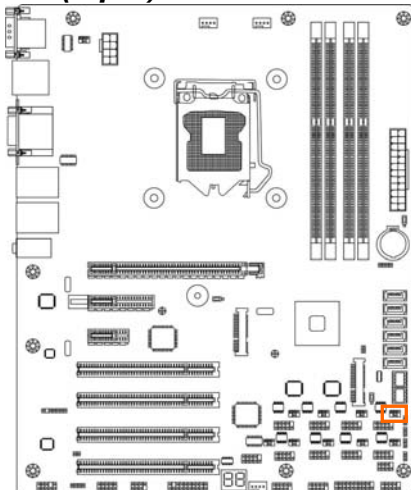


3-4 Closed:
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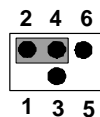


4-6 Closed:
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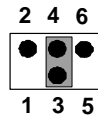
JP8 (4-pin): COM9 Header Pin9 Function Select



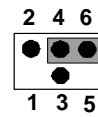
JP8→COM9 Header



2-4 Closed:
RI=RS232

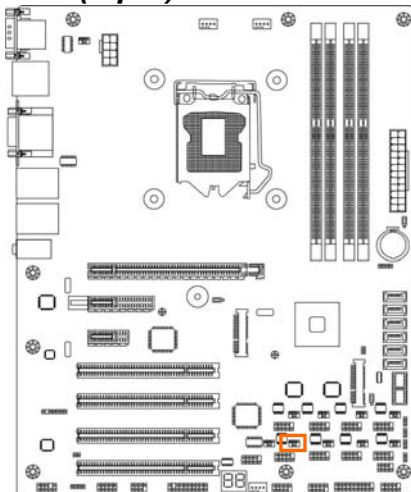


3-4 Closed:
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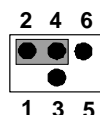


4-6 Closed:
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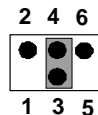
JP10 (4-pin): COM4 Header Pin9 Function Select



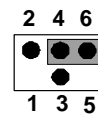
JP10→COM4 Header



2-4 Closed:
RI=RS232

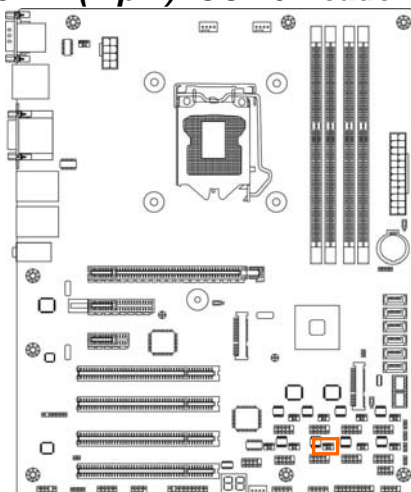


3-4 Closed:
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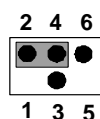


4-6 Closed:
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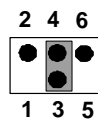
JP11 (4-pin): COM6 Header Pin9 Function Select



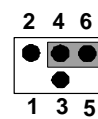
JP11→COM6 Header



2-4 Closed:
RI=RS232

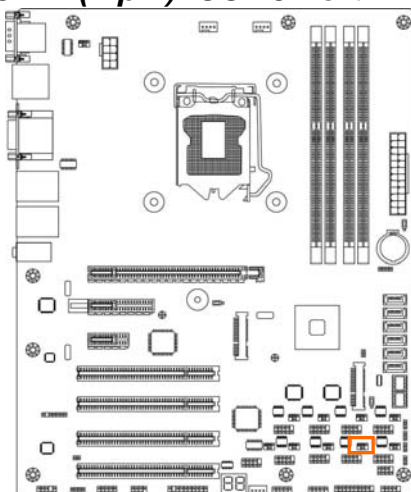


3-4 Closed:
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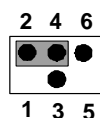


4-6 Closed:
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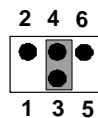
JP12 (4-pin): COM8 Port Pin9 Function Select



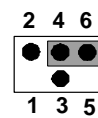
JP12→COM8 Header



2-4 Closed:
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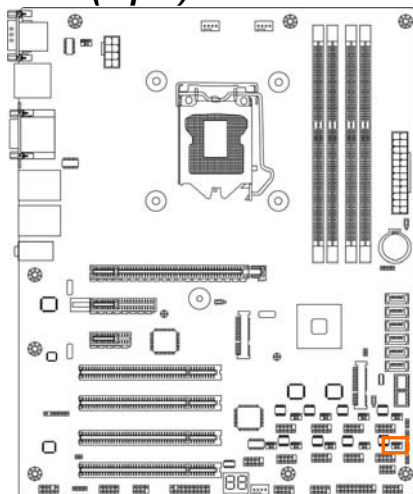


3-4 Closed:
RI= 5V;

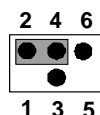


4-6 Closed:
RI= 12V;

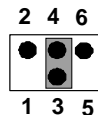
JP13 (4-pin): COM10 Port Pin9 Function Select



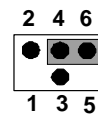
JP13→COM10 Header



2-4 Closed:
RI=RS232

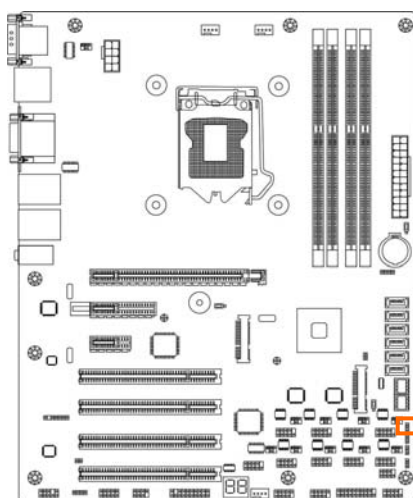


3-4 Closed:
RI= 5V;



4-6 Closed:
RI= 12V;

JP14 (2-pin): ME Features Select



JP14

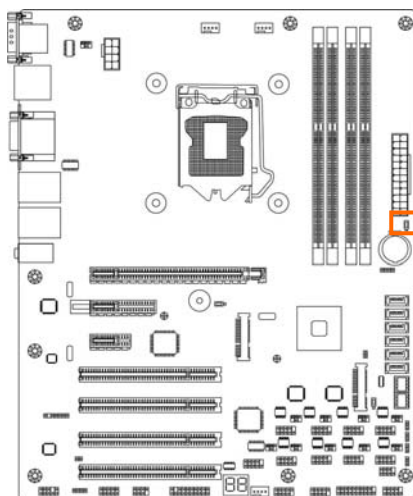


1-2 Open:ME Features Enabled;

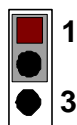


1-2 Closed:ME Features Disabled.

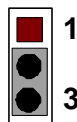
JBAT (3-pin): Clear CMOS Function Settings



JBAT

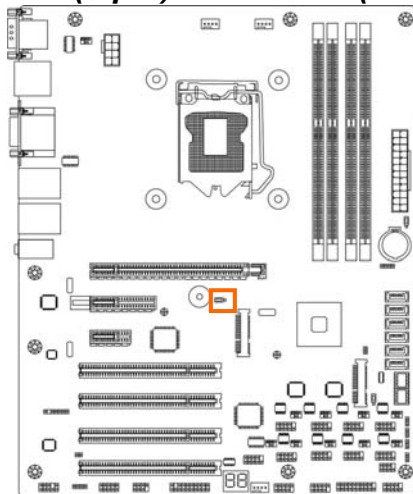


1-2 Closed: Normal;

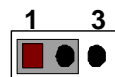


2-3 Closed: Clear CMOS.

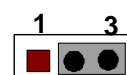
JP2 (3-pin): Mini PCI-E (PE4) Slot VCC 3.3V/3.3 VSB Select



JP2 → PE4 Slot

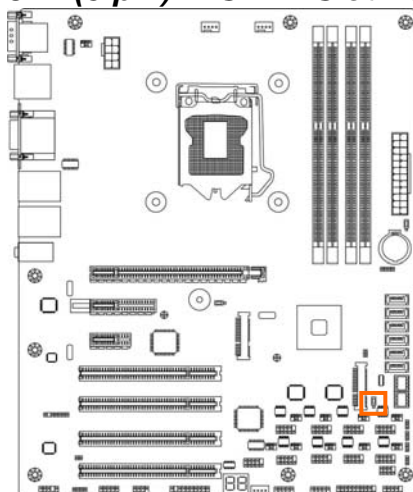


1-2 Closed : MINI PCI-E VCC= 3.3V;

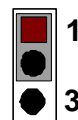


2-3 Closed : MINI PCI-E VCC= 3.3VSB

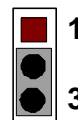
JP4 (3-pin): MSATA Slot VCC 3.3V/3.3 VSB Select



JP4 → MSATA

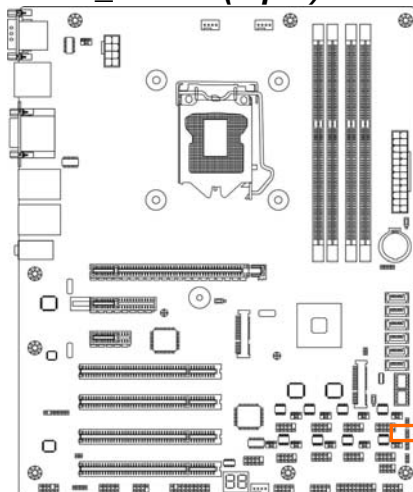


1-2 Closed: MSATA VCC= 3.3V;



2-3 Closed: MSATA VCC= 3.3VSB

CASE_OPEN (2-pin): Case Open Message Display Function Select



CASE_OPEN



1-2 Open: Normal;



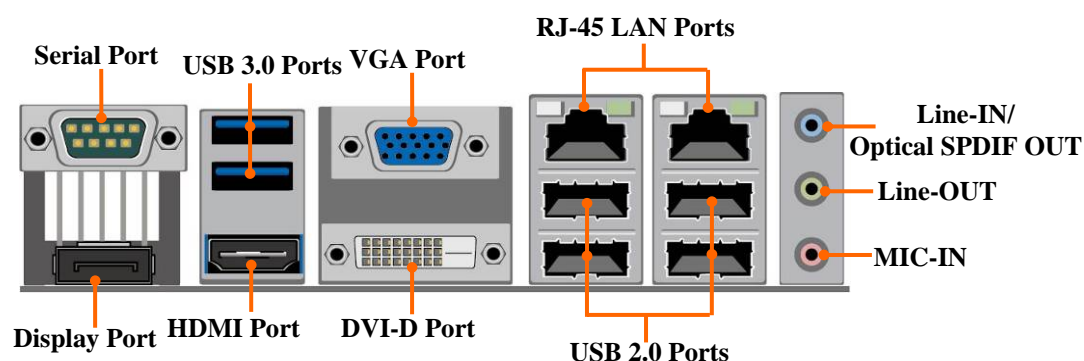
1-2 Closed : Case Open Function Selected.

Pin 1-2 Closed: Case open display function enabled.

Use needs to enter BIOS and enable 'Case Open Detect' function. In this case if you case is removed, next time when you restart your computer a message will be displayed onscreen to inform you of this.

2-2 Connectors and Headers

2-2-1 Rear I/O Back Panel Connectors



- (1) **Serial port Connector: COM1**
These two serial ports are for user to connect compatible mouse, modem or other peripherals.
- (2) **Display Port: DP**
Display port can support a maximum screen resolution of 2560 x 1600 (actual resolution depending on the monitor used) and high-quality audio playback. Please connect it to your monitor with DP cable if your monitor support display port.
- (3) **USB 3.0 Port Connector: USB1**
These USB 3.0 connectors are for user to connect USB 3.0 compatible devices to the system board.
- (4) **High-Definition Multimedia Interface: HDMI**
This point-to-point interface is for audio and video signals designed as a single-cable solution for home theater and consumer electronics equipment.
- (5) **D-Sub 15-pin VGA Connector: CRT**
VGA connector is the 15-pin D-subminiature female connector; it is for the display devices, such as the CRT monitor, LCD monitor and so on.
- (6) **Digital Visual Interface: DVI1**
This interface standard designed to maximize the visual quality of digital display devices such as flat panel LCD computer displays and digital projectors.
- (7) **USB 2.0 Port Connector: UL1(Middle & Bottom)/ UL2(Middle & Bottom)**
The connectors are 4-pin connector that connects USB devices to the system board.
- (8) **RJ-45 LAN Port Connectors: UL1(Top)/UL2(Top)**
The connectors are standard RJ-45 connectors for Network.
- (9) **Line-In(SPDIF Out), Lin-Out, MIC Audio connectors: AUDIO1**
These Connectors are 3 Phone-Jack for LINE-OUT, LINE-IN, MIC audio connections.

| Color | Name | Function |
|-------|-------------------|---|
| Blue | Line-in/SPDIF Out | Audio input to sound chip/SPDIF Out Connector |
| Green | Line-out | Audio output to speaker |
| Pink | MIC | Microphone Connector |

2-2-2 Motherboard Internal Connectors

(1) ATXPWR (24-pin block): Main Power Connector

ATX Power Supply connector: This is a new defined 24-pins connector that usually comes with ATX case. The ATX Power Supply allows using soft power on momentary switch that connect from the front panel switch to 2-pins Power On jumper pole on the motherboard. When the power switch on the back of the ATX power supply turned on, the full power will not come into the system board until the front panel switch is momentarily pressed. Press this switch again will turn off the power to the system board.

- ** We recommend that you use an ATX 12V Specification 2.0-compliant power supply unit (PSU) with a minimum of 350W power rating. This type has 24-pin and 4-pin power plugs.
- ** If you intend to use a PSU with 20-pin and 4-pin power plugs, make sure that the 20-pin power plug can provide at least 15A on +12V and the power supply unit has a minimum power rating of 350W. The system may become unstable or may not boot up if the power is inadequate.
- ** If you are using a 20-pin power plug, please refer to Figure1 for power supply connection. Power plug form power supply and power connectors from motherboard both adopt key design to avoid mistake installation. You can insert the power plug into the connector with ease only in the right direction. If the direction is wrong it is hard to fit in and if you make the connection by force it is possible.

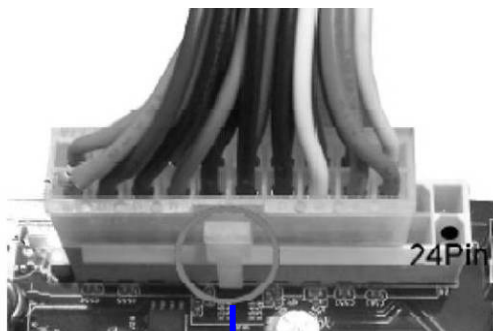
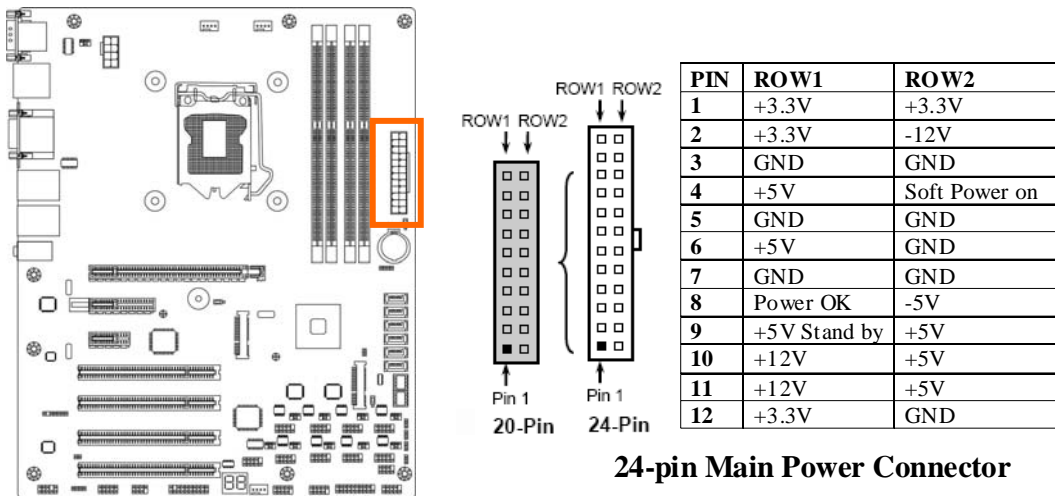


Figure1: 20-pin power plug

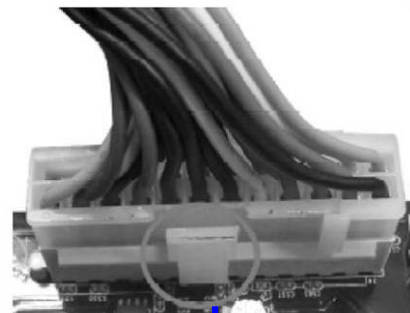
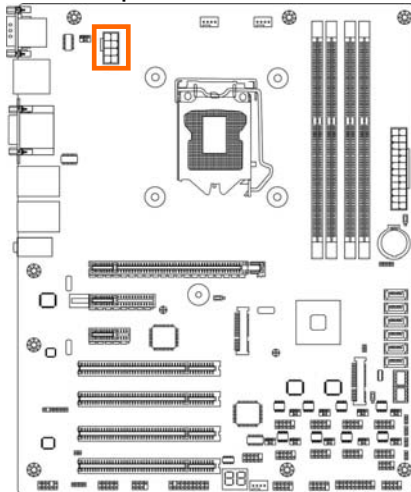


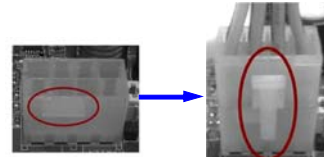
Figure 2: 24-pin power plug

(2) ATX12V (8-pin block): 12V Power Connector

This is a new defined 8-pin connector that usually comes with ATX Power Supply that supports extra 12V voltage to maintain system power consumption. Without this connector might cause system unstable because the power supply can not provide sufficient current for system.



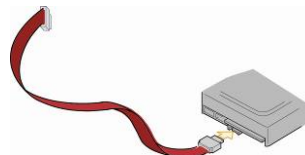
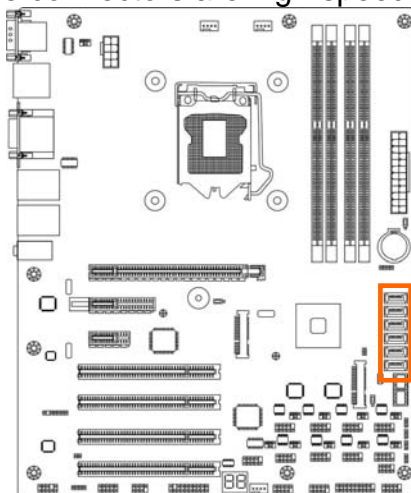
Pin 1 →



| Pin | Definition | No. | Definition |
|-----|------------|-----|------------|
| 1 | GND | 5 | +12V |
| 2 | GND | 6 | +12V |
| 3 | GND | 7 | +12V |
| 4 | GND | 8 | +12V |

(3) SATA1/2/3/4/5/6: SATAIII Port connector

These connectors are high-speed SATAIII ports that support 6 GB/s transfer rate.

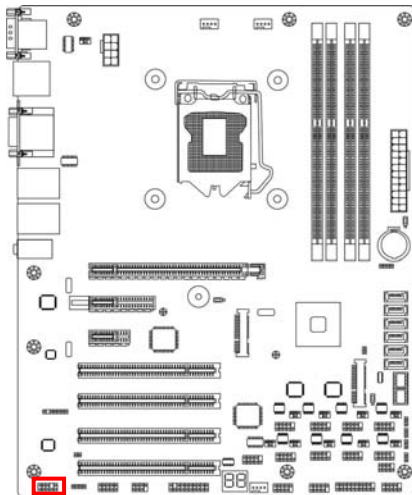


| Pin No. | Definition |
|---------|------------|
| 1 | GND |
| 2 | TXP |
| 3 | TXN |
| 4 | GND |
| 5 | RXN |
| 6 | RXP |
| 7 | GND |

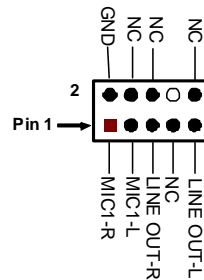
2-2-3 Header Pin Definition

(1) FP_AUDIO (9-pin): Line-Out, MIC-In Header

This header is connected to Front Panel Line-out, MIC connector with cable.



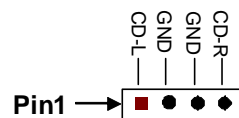
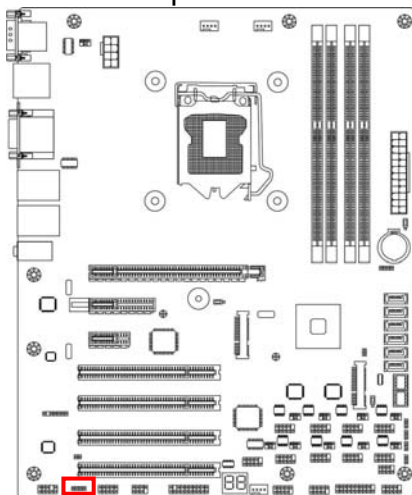
FP_AUDIO



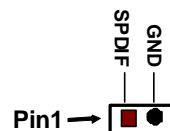
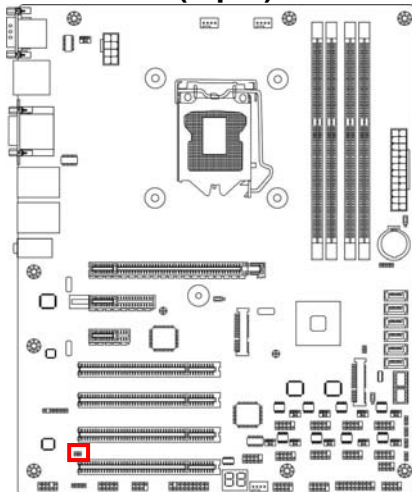
Line-Out, MIC Header

(2) CD_IN (4-pin): CD AUDIO-In Header

CDIN header is for CD-Audio Input signal. Please connect it to CD-ROM CD-Audio output connector.

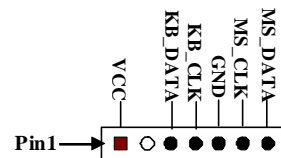
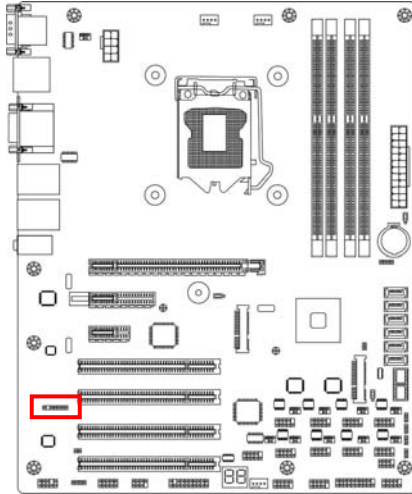


(3) HDMI_SPDIF (2-pin): HDMI-SPDIF Out header

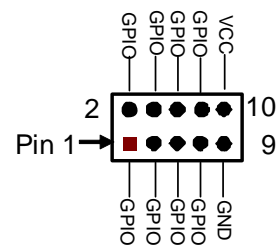
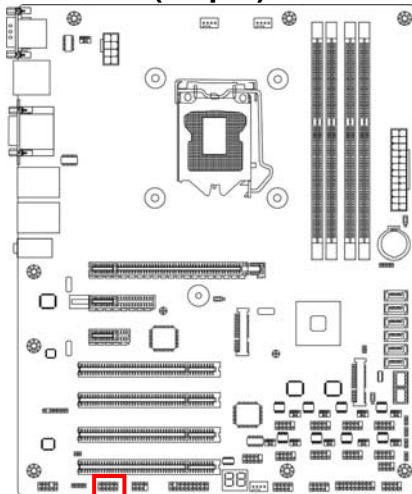


HDMI_SPDIF Header

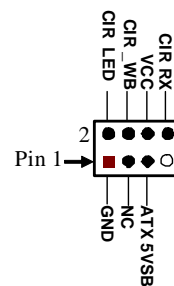
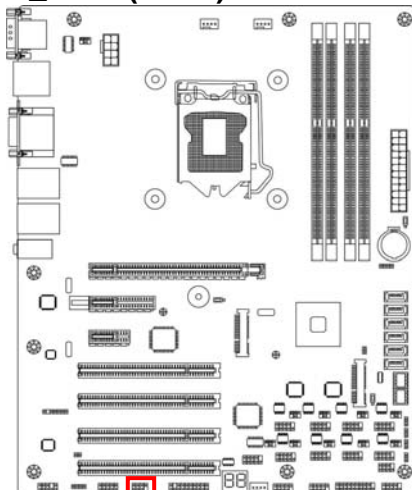
(4) KBMS (6-pin): PS/2 Keyboard & Mouse Header



(5) GPIO_CON (10-pin): GPIO Header

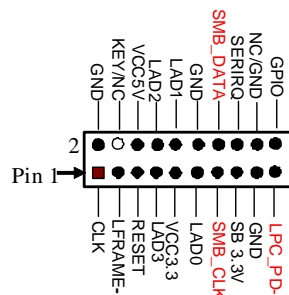
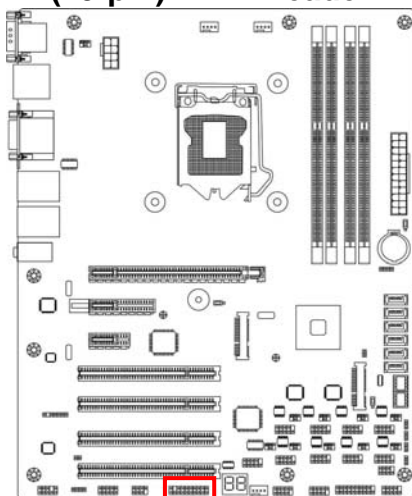


(6) CIR_CON (7-Pin): CIR Header

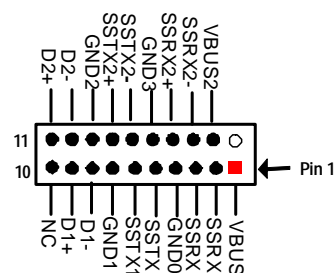
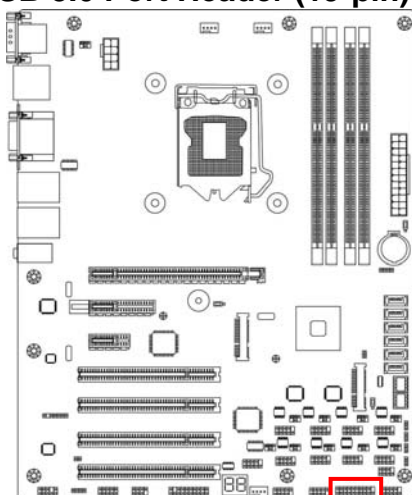


CIR Header

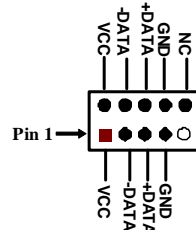
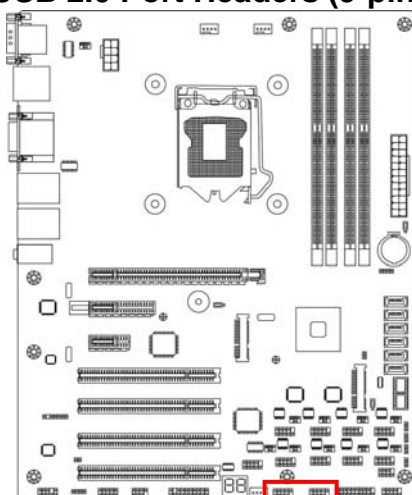
(7) TPM (19-pin): TPM Header



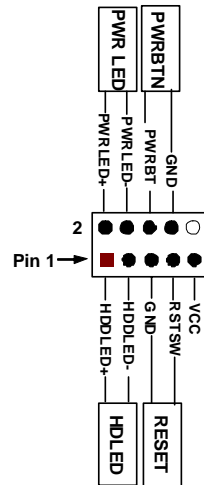
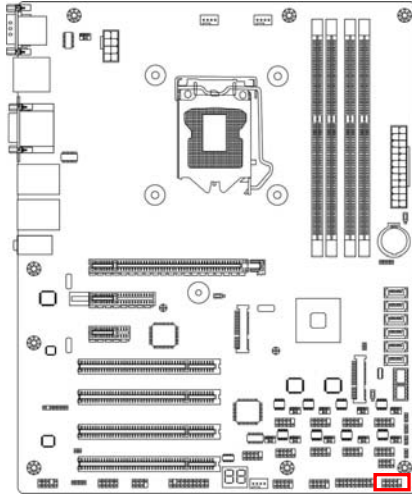
(8) USB 3.0 Port Header (19-pin): USB2



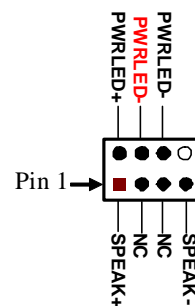
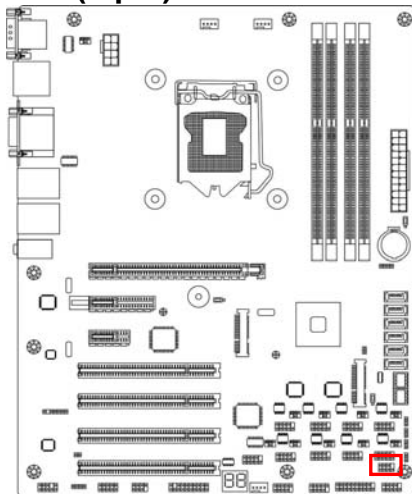
(9) USB 2.0 Port Headers (9-pin): USB3/USB4



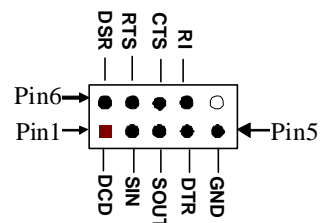
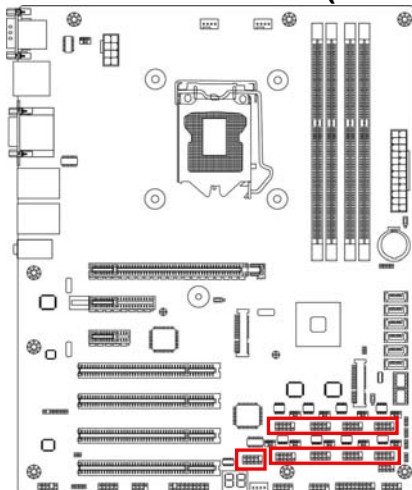
(10) JW-FP (9-pin): Front Panel Header



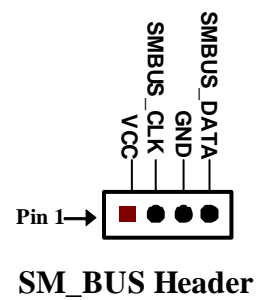
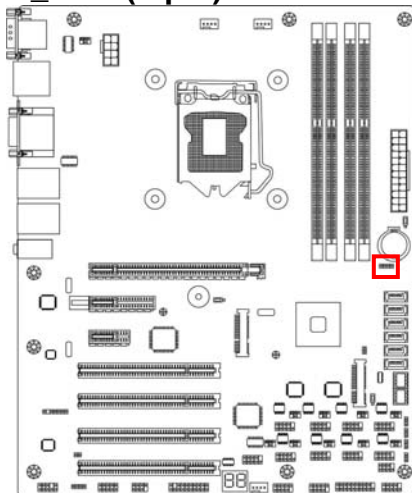
(11) JP15 (7-pin): PWR LED Header & Speaker Header



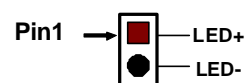
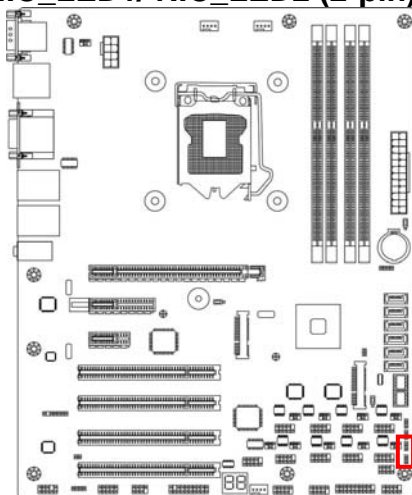
(12) COM2/3/4/5/6/7/8/9/10 (9-Pin): Serial Port Header



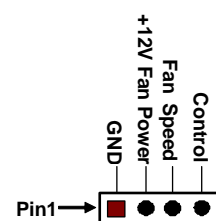
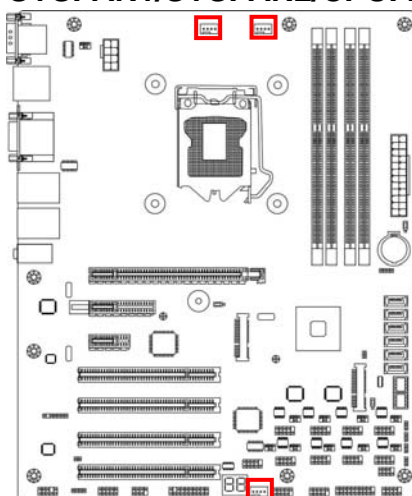
(13) SM_BUS (4-pin): SM BUS Header



(14) NIC_LED1/ NIC_LED2 (2-pin): LANLED Header



(15) SYSFAN1/SYSFAN2/CPUFAN1 (4-pin): FAN Headers



CPUFAN/SYSFAN1/SYSFAN2

Chapter 3

Introducing BIOS

Notice! The BIOS options in this manual are for reference only. Different configurations may lead to difference in BIOS screen and BIOS screens in manuals are usually the first BIOS version when the board is released and may be different from your purchased motherboard. Users are welcome to download the latest BIOS version form our official website.

The BIOS is a program located on a Flash Memory on the motherboard. This program is a bridge between motherboard and operating system. When you start the computer, the BIOS program will gain control. The BIOS first operates an auto-diagnostic test called POST (power on self test) for all the necessary hardware, it detects the entire hardware device and configures the parameters of the hardware synchronization. Only when these tasks are completed done it gives up control of the computer to operating system (OS). Since the BIOS is the only channel for hardware and software to communicate, it is the key factor for system stability, and in ensuring that your system performance as its best.

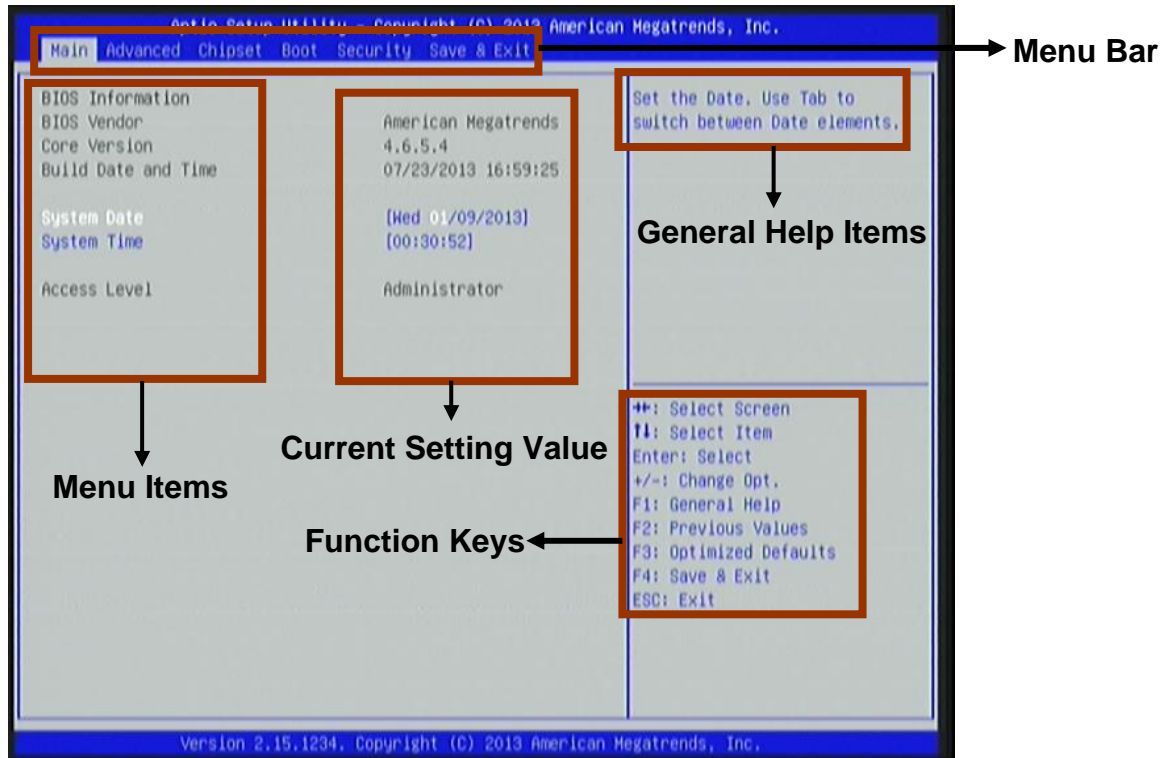
3-1 Entering Setup

Power on the computer and by pressing immediately allows you to enter Setup. If the message disappears before your respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the “RESET” button on the system case. You may also restart by simultaneously pressing <Ctrl>, <Alt> and <Delete> keys. If you do not press the keys at the correct time and the system does not boot, an error message will be displayed and you will again be asked to

Press to enter Setup

3-2 BIOS Menu Screen

The following diagram show a general BIOS menu screen:



BIOS Menu Screen

3-3 Function Keys

In the above BIOS Setup main menu of, you can see several options. We will explain these options step by step in the following pages of this chapter, but let us first see a short description of the function keys you may use here:

- Press ←→ (left, right) to select screen;
- Press ↑↓ (up, down) to choose, in the main menu, the option you want to confirm or to modify.
- Press <Enter> to select.
- Press <+>/<-> keys when you want to modify the BIOS parameters for the active option.
- [F1]: General help.
- [F2]: Previous value.
- [F3]: Optimized defaults.
- [F4]: Save & Reset.
- Press <Esc> to quit the BIOS Setup.

3-4 Getting Help

Main Menu

The on-line description of the highlighted setup function is displayed at the top right corner the screen.

Status Page Setup Menu/Option Page Setup Menu

Press F1 to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window, press <Esc>.

3-5 Menu Bars

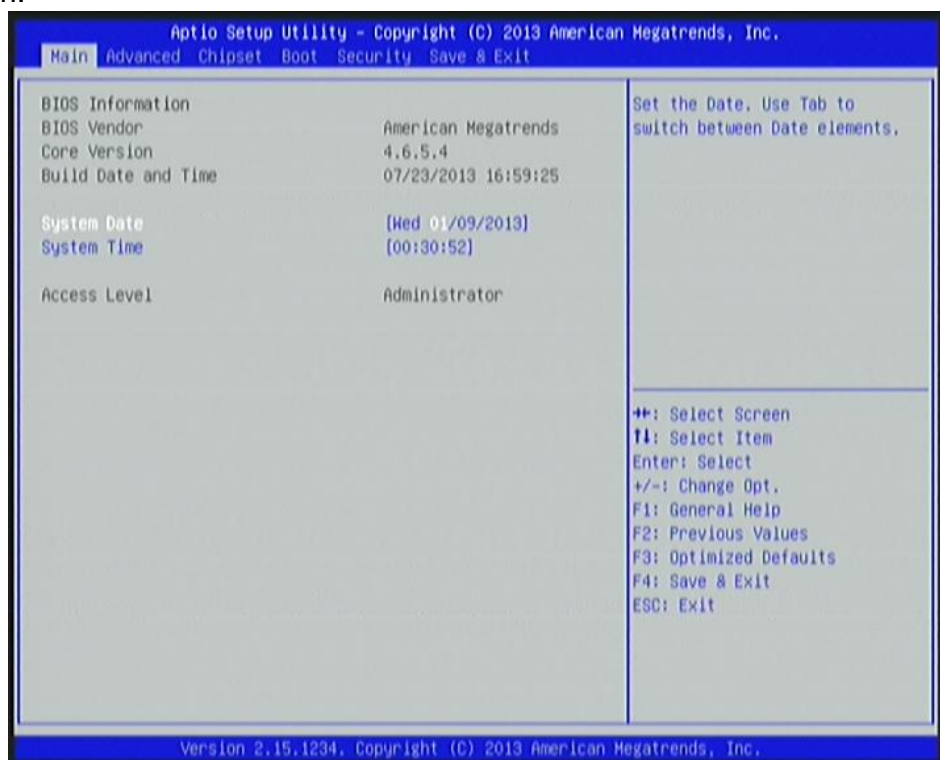
There are six menu bars on top of BIOS screen:

| | |
|------------------------|---|
| Main | To change system basic configuration |
| Advanced | To change system advanced configuration |
| Chipset | To change chipset configuration |
| Boot | To change boot settings |
| Security | Password settings |
| Save & Exit | Save setting, loading and exit options. |

User can press the right or left arrow key on the keyboard to switch from menu bar. The selected one is highlighted.

3-6 Main Menu

Main menu screen includes some basic system information. Highlight the item and then use the <+> or <-> and numerical keyboard keys to select the value you want in each item.



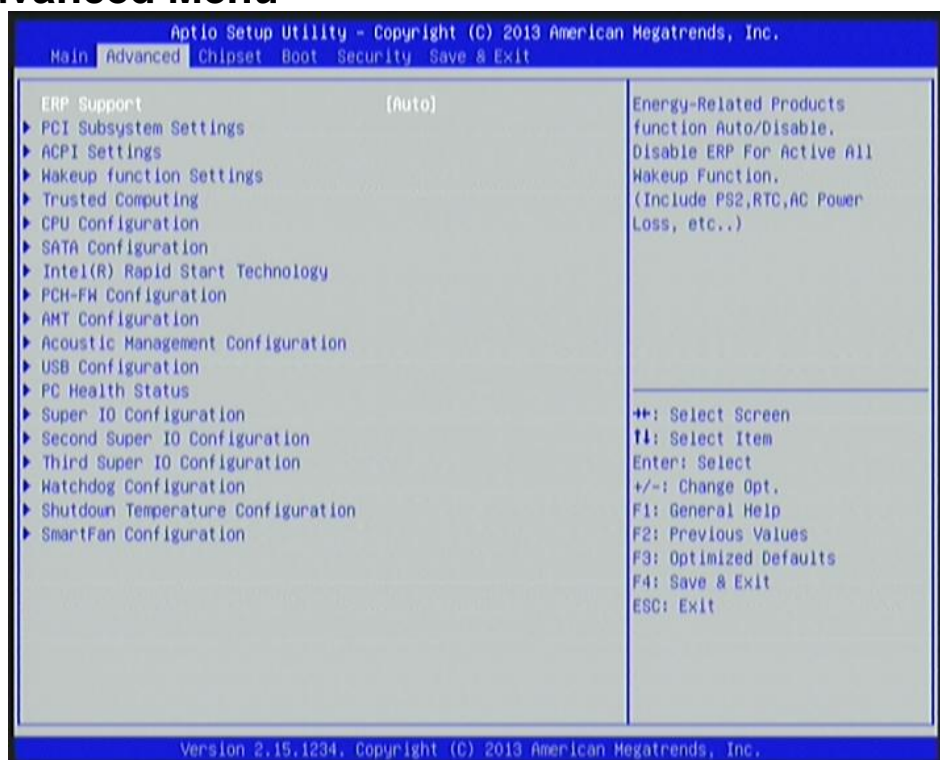
System Date

Set the date. Please use [Tab] to switch between data elements.

System Time

Set the time. Please use [Tab] to switch between time elements.

3-7 Advanced Menu



ERP Function

Use this item to enable or disable ERP function for this board. This item should be set as [Disabled] if you wish to have Active All Wakeup Function.

► PCI Subsystem Settings

Press [Enter] to enter and make settings for the following sub-items:

PCI Common Settings:

PCI Latency Timer

Use this item to set value to be programmed into PCI latency timer register.

VGA Palette Snoop

Use this item to enable or disable VGA palette registers snooping.

PERR# Generation

Use this item to enable or disable PCI device to generate PERR#.

SERR# Generation

Use this item to enable or disable PCI device to generate SERR#.

► PCI Express Settings

Press [Enter] to make settings for the following sub-items:

PCI Express Device Register Settings:

Relaxed Ordering

Use this item to enable or disable PCI express device relaxed ordering.

Extended Tag

If set as [Enabled] it will allow device to use 8-bit tag field as a requester.

No Snoop

Use this item to enable or disable PCI Express device No Snoop option.

Maximum Payload

Use this item to set maximum payload of PCI Express device or allow system

BIOS to select the value.

Maximum Read Request

Use this item to set maximum read request size of PCI Express device or allow system BIOS to select the value.

► **ACPI Settings**

Press [Enter] to make settings for the following sub-items:

ACPI Settings

ACPI Sleep State

Use this item to select the highest ACPI sleep state the system will enter when the suspend button is pressed.

The optional settings are: [Suspend Disabled]; [S3 only (Suspend to RAM)].

► **Wakeup Function Settings**

Press [Enter] to make settings for the following sub-items:

Wake System with Fixed Time

Use this item to enable or disable system wake on alarm event. When set as [Enabled], system will wake on the hour/min/sec specified.

CIR Wakeup

Use this item to enable or disable CIR wakeup.

PS2 KB/MS Wakeup

Use this item to enable or disable PS2 KB/MS wakeup. This function is only supported when ERP function is disabled.

PCI PME Wakeup

Use this item to enable or disable S3/S4/S5 PCI PME Wakeup. This function is only supported when ERP function is disabled.

USB S3/S4 Wakeup

Use this item to enable or disable USB S3/S4 wakeup. This function is only supported when ERP function is disabled.

► **Trusted Computing**

Press [Enter] to enable or disable Security Device Support.

Security Device Support

Use this item to enable or disable BIOS support for security device. TCG EFI protocol and INT1A interface will not be available.

The optional settings: [Disabled]; [Enabled].

► **CPU Configuration**

Press [Enter] to view current CPU configuration and make settings for the following sub-items:

Hyper-Threading

The optional settings: [Disabled]; [Enabled].

[Enabled]: for Windows XP and Linux (OS optimized for Hyper-Threading Technology).

[Disabled]: for other OS (OS optimized not for Hyper-Threading Technology).

Active Processor Cores

Use this item to select number of cores to enable in each processor package.

Limit CPUID Maximum

The optional settings: [Disabled]; [Enabled].

This item should be set as [Disabled] for Windows XP.

Execute Disable Bit

The optional settings: [Disabled]; [Enabled].

Intel Virtualization Technology

The optional settings: [Enabled]; [Disabled].

When set as [Enabled], a VHM can utilize the additional hardware capabilities provided by Vanderpool Technology.

EIST

Use this item to enable or disable Intel SpeedStep.

Turbo Mode

Use this item to enable or disable Turbo Mode.

**This item might not be available depending on configuration.*

Energy Performance

Use this item to optimize between performance and power savings.

The optional settings are: [Performance]; [Balanced Performance]; [Balanced Energy]; [Energy Efficient].

**This item might not be available depending on configuration.*

CPU C Status

Use this item to enable or disable CPU C status.

The optional settings: [Disabled]; [Enabled].

When set as Enabled], the following sub-items shall appear:

CPU C6 Report

Use this item to enable or disable CPU C6 report to OS.

CPU C7 Report

Use this item to enable or disable CPU C7 report to OS.

The optional settings are: [Disabled]; [CPU C7]; [CPU C7s].

► **SATA Configuration**

Press [Enter] to make settings for the following sub-items:

SATA Controller(s)

The optional settings: [Disabled]; [Enabled].

SATA Mode Selection

The optional settings are: [IDE]; [AHCI]; [RAID].

**When set as [IDE] or [RAID], user can make further settings in 'IDE Legacy/Native Mode Selection'.*

IDE Legacy/Native Mode Selection

The optional settings are: [Native]; [Legacy].

**When set as [AHCI] or [RAID], user can make further settings in the following items:*

Aggressive LPM Support

Use this item to enable PCH to aggressively enter link power state.

The optional settings: [Enabled]; [Disabled].

SATA Controller Speed

The item is for user to set the maximum speed the SATA controller can support.

The optional settings are: [Default]; [Gen1]; [Gen2]; [Gen3].

**When set as [AHCI] or [RAID], user can also make further settings for each available SATA (1~6) port or MSATA port:*

Serial ATA Port 1/2/3/4/5/6/mSATA

Port 1/ Port 2/ Port 3/ Port 4/ Port 5/ Port 6/ mSATA

The optional settings: [Disabled]; [Enabled].

Use this item to enable or disable each SATA port.

SATA Device Type

The optional settings are: [Hard Disk Drive]; [Solid State Drive].

► **Intel(R) Rapid Start Technology**

Press [Enter] to go to next screen to enable or disable '**Intel(R) Rapid Start Technology**'.

**When set as [Enabled], user can also make further settings in the following items that appear:*

Entry on S3 RTC Wake

Use this item to enable or disable RapidStart innovation upon S3 RTC wake.

Entry After

Use this item to enable RTC wake timer at S3 entry. Value ranges from 0 (immediately) to 120 minutes.

Active Page Threshold Support

Use this item to enable or disable support for RST with small partition.

Hybrid Hard Disk Support

Use this item to enable or disable Hybrid Hard Disk Support.

RapidStart Display Save/Restore

Use this function to enable or disable RapidStart Display Save/Restore function.

► **PCH-FW Configuration**

Press [Enter] to view ME information and make settings for '**Firmware Update Configuration**'.

► **Firmware Update Configuration**

Press [Enter] to make settings for ME FW Image RE-Flash.

ME FW Image RE-Flash

Use this item to enable or disable ME FW Image Re-Flash function.

► **AMT Configuration**

Use this item to configure Active Management Technology parameters.

Press [Enter] to make settings for the following sub-items:

Intel AMT

Use this item to enable or disable Intel Active Management Technology BIOS extension.

BIOS Hotkey Pressed

Use this function to enable or disable BIOS Hotkey Press function.

MEBx Selection Screen

Use this function to enable or disable MEBx Selection Screen function.

Hide Un-Configure ME Confirmation

Use this function to enable or disable Hide Un-Configure ME without password Configuration Prompt function.

MEBx Debug Message Output

Use this function to enable or disable MEBx Debug Message Output function.

Un-Configure ME

Use this function to enable or disable Un-Configure ME without password function.

Amt Wait Timer

Use this item to set time to wait before sending ASF_GET_BOOT_OPTIONS.

Disable ME

Use this item to set ME to soft Temporary Disabled function.

ASF

Use this item to enable or disable Alert Specification Format.

Active Remote Assistance Process

Use this item to enable or disable Trigger CIRA boot function.

USB Configure

Use this item to enable or disable USB configure function.

PET Progress

Use this item to enable or disable PET events progress to receive PET event or not.

WatchDog

Use this item to enable or disable WatchDog Timer. When set as [Enabled], the following sub-items shall appear:

OS Timer

Use this item to set OS watch dog timer.

BIOS Timer

Use this item to set BIOS watch dog timer.

► **Acoustic Management Configuration**

Press [Enter] to make settings for the following sub-items:

Press [Enter] to go to next screen to enable or disable 'Automatic Acoustic Management'.

► **USB Configuration**

Press [Enter] to make settings for the following sub-items:

Legacy USB Support

The optional settings are: [Enabled]; [Disabled]; [Auto].

[Enabled]: To enable legacy USB support.

[Disabled]: to keep USB devices available only for EFI specification,

[Auto]: To disable legacy support if no USB devices are connected.

XHCI Hand-off

This is a workaround for Oses without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.

The optional settings are: Enabled]; [Disabled].

EHCI Hand-off

This is a workaround for Oses without EHCI hand-off support. The EHCI ownership change should be claimed by EHCI driver.

The optional settings are: [Disabled]; [Enabled].

USB Mass Storage Driver Support

The optional settings are: [Disabled]; [Enabled].

USB hardware delay and time-out**USB Transfer time-out**

Use this item to set the time-out value for control, bulk, and interrupt transfers.

The optional settings are: [1 sec]; [5 sec]; [10 sec]; [20 sec].

Device reset time-out

Use this item to set USB mass storage device start unit command time-out.

The optional settings are: [10 sec]; [20 sec]; [30 sec]; [40 sec].

Device power-up delay

Use this item to set maximum time the device will take before it properly reports itself to the host controller. 'Auto' uses default value: for a root port it is 100 ms, for a hub port the delay is taken from hub descriptor. The optional settings: [Auto]; [Manual]. Select [Manual] you can set value for the following sub-item: **Device Power-up delay in seconds**, the delay range in from 1 to 40 seconds, in one second increments.

► **PC Health Status**

Press [Enter] to view hardware health status.

► **Super I/O Configuration**

Press [Enter] to make settings for the following sub-items:

Super IO Configuration

► **COM1 Port Configuration**

Press [Enter] to make settings for the following items:

Serial Port

Use this item to enable or disable serial port (COM).

Change Settings

Use this item to select an optimal setting for super IO device.

Select RS232/RS422/RS485

The optional settings are: [RS422]; [RS232]; [RS485].

Mode Speed Select

The optional settings are: [RS232/RS422/RS485=250kbps]; [RS232=1Mbps, RS422/RS485=10Mbps].

► **COM2 Port Configuration**

Press [Enter] to make settings for the following sub-items:

Serial Port

Use this item to enable or disable serial port (COM).

Change Settings

Use this item to select an optimal setting for super IO device.

Select RS232/RS422/RS485

The optional settings are: [RS422]; [RS232]; [RS485].

Mode Speed Select

The optional settings are: [RS232/RS422/RS485=250kbps]; [RS232=1Mbps, RS422/RS485=10Mbps].

CIR Controller

Use this item to enable or disable CIR controller.

Case Open Detect

Use this item to detect case has already open or not, show message in POST.

► **Second Super IO Configuration**

Second Super IO Configuration

► **COM3/COM4/ COM5/COM6 Configuration**

Serial Port

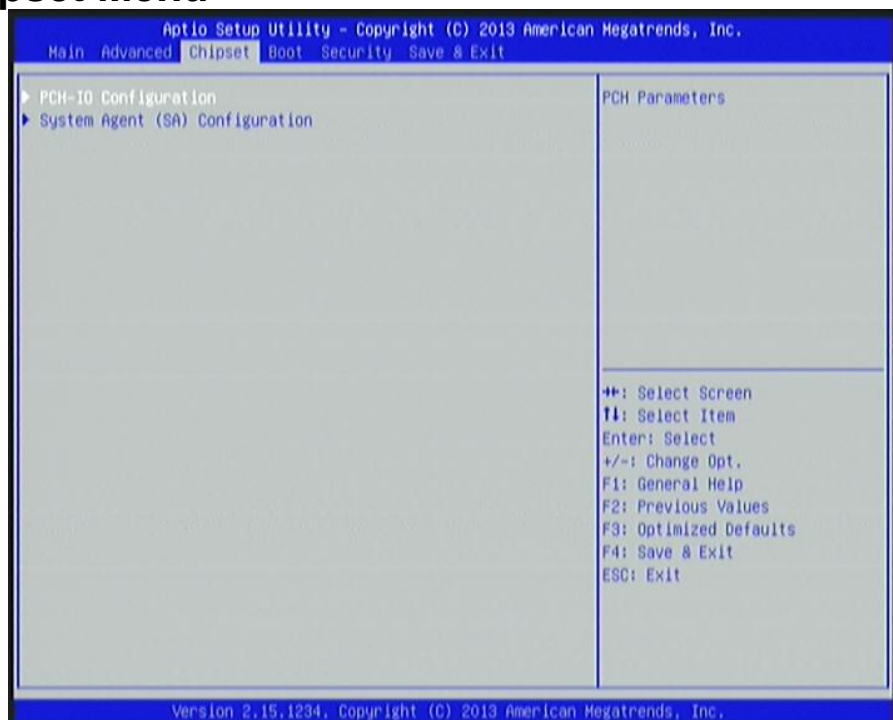
Use this item to enable or Disable serial port (COM).

Change Settings

Use this item to select an optimal setting for super IO device.

-
-
- ▶ **Third Super IO Configuration**
 - ▶ **COM7/COM8/COM9/COM10 Configuration**
 - Serial Port**
Use this item to enable or Disable serial port (COM).
 - Change Settings**
Use this item to select an optimal setting for super IO device.
 - ▶ **WatchDog Configuration**
Press [Enter] to make settings for Watchdog Configuration:
Watchdog Configuration:
 - WatchDog Timer Control**
Use this item to enable or disable WatchDog Timer Control. When set as [Enabled], the following sub-items shall appear:
 - WatchDog Timer Val**
User can set a value in the range of 4 to 255.
 - WatchDog Timer Unit**
The optional settings are: [Second];[Minute].
 - ▶ **Shutdown Temperature Configuration**
Use this item to select system shutdown temperature.
The optional settings are: [Disabled]; [70 C/158 F]; [75 C/167 F]; [80 C/176 F]; [85 C/185 F].
 - ▶ **SmartFan Configuration**
Press [Enter] to make settings for SmartFan Configuration:
 - CPUFAN 3/4 Pin Fan Select**
The optional settings are: [3 pin]/ [4 pin].
 - SYSFAN1 3/4 Pin Fan Select**
The optional settings are: [3 pin]/ [4 pin].
 - SYSFAN2 3/4 Pin Fan Select**
The optional settings are: [3 pin]/ [4 pin].
 - CPUFAN / SYSFAN1/ SYSFAN2 Smart Mode**
When set as [Enabled], the following sub-items shall appear:
 - CPUFAN / SYSFAN1/ SYSFAN2 Full Speed Temp**
Use this item to set CPUFAN/SYSFAN1/SYSFAN2 full speed temp. Fan will run at full speed when above this temperature.
 - CPUFAN / SYSFAN1/ SYSFAN2 Idle Temp**
Use this item to set CPUFAN/SYSFAN1/SYSFAN2 idle speed temperature. Fan will run at idle speed when below this temperature.
 - SYSFAN1/ SYSFAN2 Stop Temp**
Use this item to set SYSFAN1/SYSFAN2 stop temp. Fan will stop when below this temperature.

3-8 Chipset Menu



► PCH-IO Configuration

Press [Enter] to make settings for the following sub-items:

► USB Devices Configuration

Press [Enter] to further setting USB device configuration.

USB Configuration

XHCI Mode

Use this item to select mode of operation for XHCI controller.

The optional settings are: [Smart Auto]; [Auto]; [Enabled]; [Disabled]; [Manual].

When set as **[Disabled], the following sub-items shall appear:*

EHCI1/EHCI2

Use this item to control the USB EHCI (USB 2.0) functions.

One EHCI controller must always be enabled.

When set as **[Manual], the following sub-items shall appear:*

Route USB 2.0 pins to which HC7

The optional settings are: [Route Per-Pin]; [Route all Pins to EHCI]; [Route all Pins to XHCI].

Enable USB 3.0 pins

The optional settings are: [Select Per-Pin]; [Disable all Pins]; [Enable all Pins].

Azalia HD Audio

The optional settings are: [Disabled]; [Enabled]; [Auto].

Onboard LAN1 Controller

Use this item to enable or disable onboard LAN controller.

Wake on LAN1

Use this item to enable or disable integrated LAN to wake the system. The Wake on LAN can not be disabled if ME is on at Sx state.

Onboard LAN2 Device

Use this item to control the PCI Express root port.

SLP_S4 Assertion Width

Use this item to select a minimum assertion width of the SLP_S4# signal to ensure that the DRAMs has been safely power-cycled.

The optional settings are: [1-2 Seconds]; [2-3 Seconds]; [3-4 Seconds]; [4-5 Seconds].

Restore AC Power Loss

Use this item to select AC power state when power is re-applied after a power failure. The optional settings are: [Power Off]; [Power On]; [Last State].

► **System Agent (SA) Configuration**

Press [Enter] to make settings for the following sub-items:

VT-D

The optional settings are: [Enabled]; [Disabled]. This item might not be available depending on configuration.

Azalia Internal HDMI Codec

Use this item to enable or disable DP/HDMI/DVI port audio device.

The optional settings are: [Enabled]; [Disabled].

► **Graphics Configuration**

Press [Enter] to make further settings for Graphics Configuration.

Graphics Configuration

Primary IGFX Boot Display

Use this item to select the video device which will be activated during POST. This has no effect if external graphics present. Secondary boot display selection will appear based on your selection. VGA modes will be supported only on primary display.

The optional settings are: [VBIOS Default]; [CRT]; [HDMI]; [DVI]; [Display Port].

**When set as [CRT]; [HDMI]; [DVI] or [Display Port], the following sub-item shall appear:*

Secondary IGFX Boot Display

The optional settings are: [Disabled]; [CRT]; [HDMI]; [DVI]; [Display Port].

Primary Display

Use this item to select which of IGFX/PEG/PCI graphics device should be primary display or select SG for switchable GFX.

The optional settings are: [Auto]; [IGFX]; [PEG]; [PCI].

Internal Graphics

The optional settings are: [Auto]; [Disabled]; [Enabled].

Aperture Size

The optional settings are: [128MB]; [256MB]; [512MB].

DVMT Pre-Allocated

Use this item to select DVMT 5.0 pre-allocated (fixed) graphics memory size used by the internal graphics device.

The optional settings are: [32M]; [64M]; [128M]; [256M]; [512M]; [1024M].

DVMT Total Gfx Mem

Use this item to select DVMT 5.0 total graphics memory size used by the internal graphics device.

The optional settings are: [128M]; [256M]; [MAX].

► **PEG Configuration**

Press [Enter] to make settings for the following sub-items:

PEG Slot Configuration

PEG-Gen X

The optional settings are: [Auto]; [Gen1]; [Gen2]; [Gen3].

Enable PEG

The optional settings are: [Disabled]; [Enabled]; [Auto].

Detect Non-Compliance Device

Use this item to detect non-compliance PCI Express device in PEG.

The optional settings are: [Disabled]; [Enabled].

Program PCIe ASPM after OpROM

The optional settings are: [Enabled]; [Disabled].

[Enabled]: PCIe ASPM will be programmed after OpROM.

[Disabled]: PCIe ASPM will be programmed before OpROM.

PEG De-emphasis Control

Use this item to configure the De-emphasis control on PEG.

The optional settings are: [-6 dB]; [-3.5 dB].

PEG ASPM

Use this item to control ASPM support for the PEG device. This has no effect if PEG is not the currently active device.

The optional settings are: [Disabled]; [Auto]; [ASPM L0s]; [ASPM L1]; [ASPM L0sL1].

► **Memory Configuration**

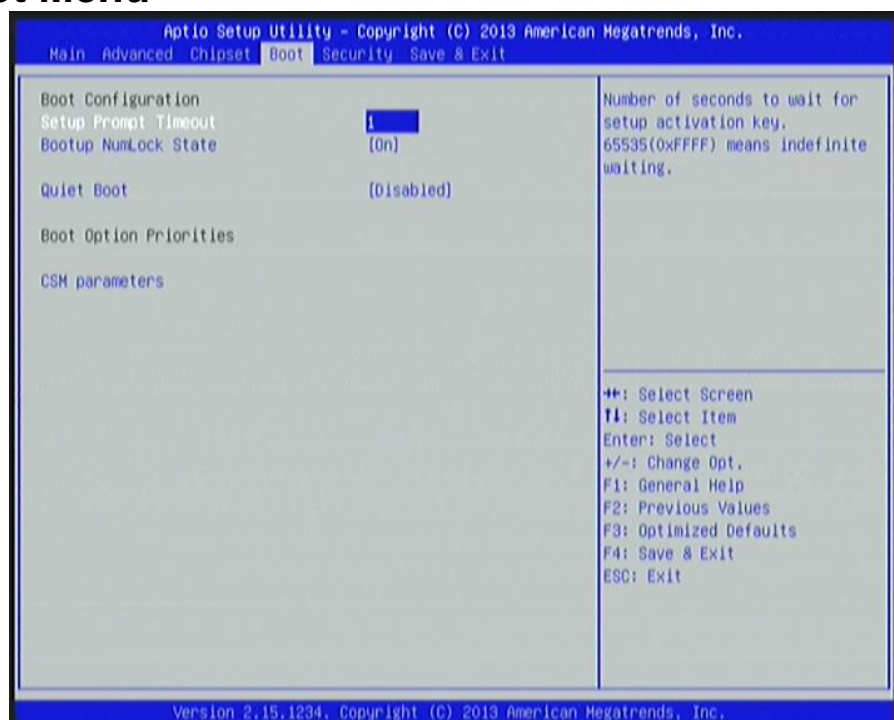
Press [Enter] to make settings for the following sub-items:

Memory Frequency Limiter

Use this item to set maximum memory frequency selection in Mhz.

The optional settings are: [Auto]; [1067]; [1333]; [1600]; [1867].

3-9 Boot Menu



Boot Configuration

Setup Prompt Timeout

Use this item to set number of seconds to wait for setup activation key.

Bootup Numlock State

Use this item to select keyboard numlock state. The optional settings are: [On]; [Off].

Quiet Boot

The optional settings are: [Disabled]; [Enabled].

Boot Option Priorities

► **CSM parameters**

Press [Enter] to make settings for the following sub-items:

Boot option filter

This option controls what device system can boot to.

The optional settings are: [UEFI and Legacy]; [Legacy only]; [UEFI only].

Launch PXE OpROM policy

This option controls the execution of UEFI and Legacy PXE OpROM.

The optional settings are: [Do not launch]; [UEFI only]; [Legacy only].

Launch Storage OpROM policy

This option controls the execution of UEFI and Legacy Storage OpROM.

The optional settings are: [Do not launch]; [UEFI only]; [Legacy only].

Launch Video OpROM policy

This option controls the execution of UEFI and Legacy Video OpROM.

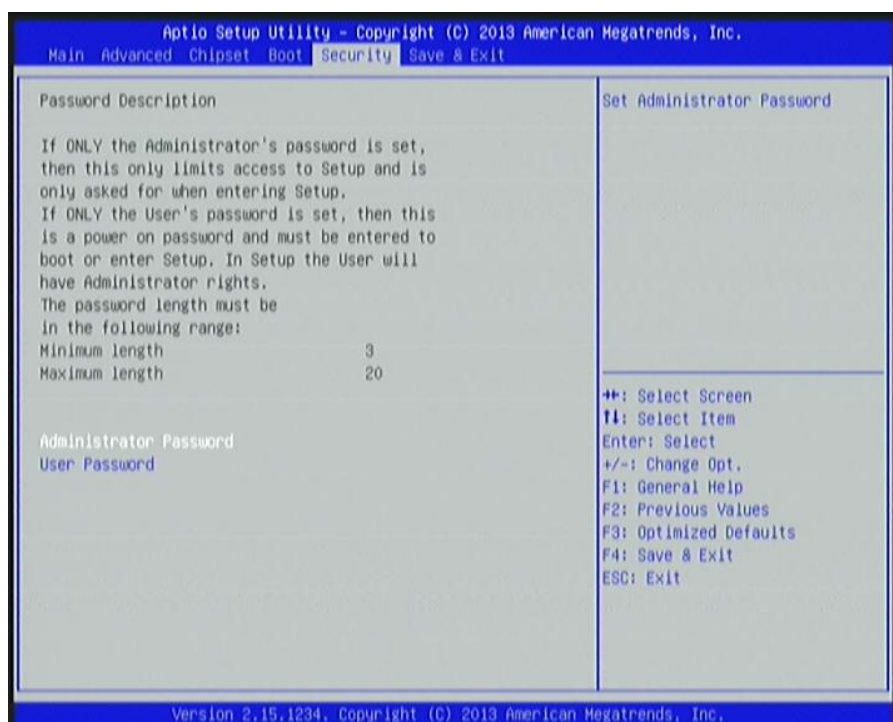
The optional settings are: [Do not launch]; [UEFI only]; [Legacy only].

Other PCI device ROM priority

This item is for PCI devices other than Network, Mass storage or video defines which OpROM to launch.

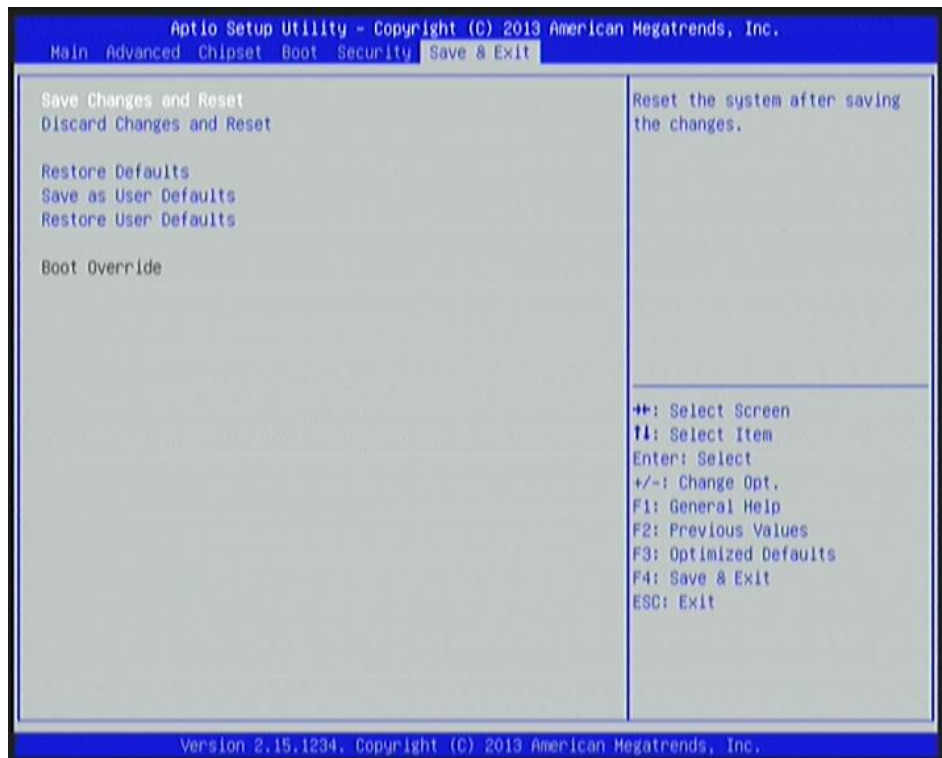
The optional settings are: [UEFI OpROM]; [Legacy OpROM].

3-10 Security Menu



Security menu allow users to change administrator password and user password settings.

3-11 Save & Exit Menu



Save Changes and Reset

This item allows user to reset the system after saving the changes.

Discard Changes and Reset

This item allows user to reset the system without saving any changes.

Restore Defaults

Use this item to restore /load default values for all the setup options.

Save as User Defaults

Use this item to save the changes done so far as user defaults.

Restore User Defaults

Use this item to restore defaults to all the setup options.